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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant (s): **Alex Kuperman et al.**

Serial No.: **09/544,742**

Group Art Unit: **1754**

Filed: **April 7, 2000**

Examiner: **Edward M. Johnson**

For: **METHOD OF PREPARING A CATALYST CONTAINING GOLD AND TITANIUM**

CERTIFICATION OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY THAT THIS PAPER IS BEING FACSIMILE TRANSMITTED TO THE U.S. PATENT AND TRADEMARK OFFICE ON THE DATE SHOWN BELOW:

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SIGNATURE OF PERSON SIGNING CERTIFICATE

May 22, 2003
DATE OF SIGNATURE

Commissioner of Patents
P.O. Box 1450
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Sir:

INTERVIEW SUMMARY

On May 7, 2003, the undersigned representative of the Applicants met personally with the Examiner at the US Patent Office for an Examiner's Interview in the above-identified Continued Prosecution Application (CPA). A summary of the Interview is provided herewith.

The purpose of the Interview was to discuss the amended claims, particularly the limitations of amended Claim 1, provided in a Preliminary Amendment in the instant CPA, filed on March 18, 2003; and to discuss the prior art, specifically, US 5,051,394 (hereinafter "Haruta '394") and US 5,502,020 (hereinafter "Iwakura"), cited in a Final Rejection under 35 U.S.C. §103 of the application prior to the CPA filing. The purpose of the Interview was also to discuss EP-A1-0,709,360 (hereinafter "EP '360"), submitted by Applicants as evidence that the claims embrace unexpected results and are therefore unobvious over the cited prior art references.

At the start, the undersigned reviewed the elements of amended Claim 1, by emphasizing the required elements of impregnation with a gold compound and a reducing agent and use of the catalyst in an oxidation process in the presence of hydrogen. The undersigned then described the differences between the claimed impregnation technique and the disclosed precipitation techniques (deposition precipitation, co-precipitation) of Haruta '394. The undersigned illustrated the differences with a few photographs of the two different techniques taken in Applicants' laboratory. Agreement was reached. The Examiner acknowledged the differences between the claimed impregnation technique and the precipitation techniques of Haruta '394.

The undersigned then addressed the new claim limitation: use of the catalyst in an oxidation process in the presence of hydrogen. The undersigned explained that such hydro-oxidation processes involve reacting an organic reactant (e.g., olefin) with oxygen in the presence of hydrogen, with the following possible outcomes: (1) oxidation of organic reactant (e.g., olefin) to desired oxidation product (e.g., olefin oxide), undesirable oxidation products (e.g., acrolein), and/or undesirable full oxidation products (CO_2, H_2O); (2) hydrogenation of olefin (e.g., propylene) to alkane (e.g., propane); and (3) combustion of hydrogen with oxygen to form water. The chemistry, based on gold-titanium catalysts, requires control of many different variables and outcomes to achieve a selective oxidation of organic reactant to desired oxidation product. The undersigned explained that, in contrast, Iwakura teaches impregnation to prepare conventional prior art silver catalysts, albeit optionally containing gold and a titanium-support; but the silver catalysts are taught for use in the direct oxidation of ethylene with oxygen in the absence of hydrogen. Accordingly, the prior art process involves the chemistry of (1) above, but does not bring into play outcomes such as **(2 - hydrogenation)** and **(3 - hydrogen combustion)**, noted above. The undersigned argued that the new limitation ("use in an oxidation process in the presence of hydrogen") placed the objective of the claimed catalyst preparation method at a considerable distance from Iwakura's chemistry. Moreover, Iwakura does not suggest impregnation for preparing a gold-titanium catalyst for use in selective hydro-oxidation processes. Hence, it was argued that the

amended claims are unobvious over Iwakura and the cited combinations of references with Iwakura.

The undersigned also directed the Examiner's attention to EP '360, pointing out exact portions of that description which teach that impregnation alone does not produce an active gold-titanium catalyst for hydro-oxidation processes. (EP '360, at page 3, lines 27-30; and at page 7, lines 1-23, particularly, lines 18-23.) Accordingly, it was argued that EP '360 teaches away from impregnation for preparing hydro-oxidation catalysts, and that accordingly, Applicants' results, which use impregnation combined with a reducing agent to prepare an active and selective hydro-oxidation catalyst, are clearly novel and unexpected, and hence unobvious over the prior art.

The Examiner found the arguments persuasive and agreement was reached. See the Examiner's Interview Summary with box (f) checked. The undersigned notes that in the copy of the Examiner's Interview Summary provided to the undersigned on May 7, 2003, the Examiner's statement reads in part, "....in view of Haruta's teachings in EP '360 that the impregnation method leads to essentially hydro-oxidation." The statement inadvertently omits the word "no," and should read "...in view of Haruta's teachings in EP '360 that the impregnation method leads to essentially *no* hydro-oxidation." (For verification, see citations in EP '360, as noted above.)

This Summary concludes with an acknowledgement of gratitude to the Examiner for his time and attention during the Interview of May 7, 2003. For the record, this Summary is not responsive to a new Office Action dated May 12, 2003, which was recently received by Applicants. A reply to the latest Office Action will be filed by Applicants prior to the 3-month deadline of August 12, 2003.

Respectfully submitted,

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